

## 4.16 Powers of Trigonometric Functions

$$456. \quad \sin^2 \alpha = \frac{1 - \cos 2\alpha}{2}$$

$$457. \quad \sin^3 \alpha = \frac{3 \sin \alpha - \sin 3\alpha}{4}$$

$$458. \quad \sin^4 \alpha = \frac{\cos 4\alpha - 4 \cos 2\alpha + 3}{8}$$

$$459. \quad \sin^5 \alpha = \frac{10 \sin \alpha - 5 \sin 3\alpha + \sin 5\alpha}{16}$$

$$460. \quad \sin^6 \alpha = \frac{10 - 15 \cos 2\alpha + 6 \cos 4\alpha - \cos 6\alpha}{32}$$

$$461. \quad \cos^2 \alpha = \frac{1 + \cos 2\alpha}{2}$$

$$462. \quad \cos^3 \alpha = \frac{3 \cos \alpha + \cos 3\alpha}{4}$$

$$463. \quad \cos^4 \alpha = \frac{\cos 4\alpha + 4 \cos 2\alpha + 3}{8}$$

$$464. \quad \cos^5 \alpha = \frac{10 \cos \alpha + 5 \sin 3\alpha + \cos 5\alpha}{16}$$

$$465. \quad \cos^6 \alpha = \frac{10 + 15 \cos 2\alpha + 6 \cos 4\alpha + \cos 6\alpha}{32}$$